

WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor device comprising:
 - forming a semiconductor film over an insulating surface;
 - radiating the semiconductor film with a first laser beam;
 - radiating the semiconductor film with a second laser beam after radiating with the first laser beam; and
 - radiating the semiconductor film with a third laser beam after radiating with the second laser beam,wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.
2. The method for manufacturing the semiconductor device according to Claim 1, wherein the radiating the semiconductor film with the first laser beam is held in order to form a crystallized semiconductor film.
3. The method for manufacturing the semiconductor device according to Claim 1, wherein the radiating the semiconductor film with the second laser beam is held in order to eliminate an oxide film on the semiconductor film.
4. The method for manufacturing the semiconductor device according to Claim 1, wherein the radiating the semiconductor film with the second laser beam is held in order to level a surface of the semiconductor film.
5. The method for manufacturing the semiconductor device according to Claim 1, wherein the method further comprises a step of forming an oxide film on the semiconductor film before radiating the semiconductor film with the first laser beam.
6. The method for manufacturing the semiconductor device according to Claim 1, wherein an energy density of the first laser beam is 300 to 500mJ/cm².
7. A method for manufacturing a semiconductor device comprising:
 - forming a semiconductor film over an insulating surface;
 - radiating the semiconductor film with a first laser beam;

radiating the semiconductor film with a second laser beam after radiating with the first laser beam under an atmosphere comprising one of hydrogen and an inert gas; and

radiating the semiconductor film with a third laser beam after radiating with the second laser beam;

wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.

8. The method for manufacturing the semiconductor device according to Claim 7, wherein the radiating the semiconductor film with the first laser beam is held in order to form a crystallized semiconductor film.

9. The method for manufacturing the semiconductor device according to Claim 7, wherein the radiating the semiconductor film with the second laser beam is held in order to eliminate an oxide film on the semiconductor film.

10. The method for manufacturing the semiconductor device according to Claim 7, wherein the radiating the semiconductor film with the second laser beam is held in order to level a surface of the semiconductor film.

11. The method for manufacturing the semiconductor device according to Claim 7, wherein the method further comprises a step of forming an oxide film on the semiconductor film before radiating the semiconductor film with the first laser beam.

12. The method for manufacturing the semiconductor device according to Claim 7, wherein an energy density of the first laser beam is 300 to 500mJ/cm².

13. A method for manufacturing a semiconductor device comprising:
forming a semiconductor film over an insulating surface;
radiating the semiconductor film with a first laser beam;
radiating the semiconductor film with a second laser beam after radiating with the first laser beam; and
radiating the semiconductor film with a third laser beam after radiating with the second laser beam under an atmosphere comprising one of hydrogen and an inert gas,

wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.

14. The method for manufacturing the semiconductor device according to Claim 13, wherein the radiating the semiconductor film with the first laser beam is held in order to form a crystallized semiconductor film.

15. The method for manufacturing the semiconductor device according to Claim 13, wherein the radiating the semiconductor film with the second laser beam is held in order to eliminate an oxide film on the semiconductor film.

16. The method for manufacturing the semiconductor device according to Claim 13, wherein the radiating the semiconductor film with the second laser beam is held in order to level a surface of the semiconductor film.

17. The method for manufacturing the semiconductor device according to Claim 13, wherein the method further comprises a step of forming an oxide film on the semiconductor film before radiating the semiconductor film with the first laser beam.

18. The method for manufacturing the semiconductor device according to Claim 13, wherein an energy density of the first laser beam is 300 to 500mJ/cm².

19. A method for manufacturing a semiconductor device comprising:
forming a semiconductor film over an insulating surface;
radiating the semiconductor film with a first laser beam;
radiating the semiconductor film with a second laser beam after radiating with the first laser beam; and
radiating the semiconductor film with a third laser beam after radiating with the second laser beam,
wherein a pulse width of the second laser beam is smaller than a pulse width of the first laser beam, and
wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.

20. The method for manufacturing the semiconductor device according to Claim 19, wherein the radiating the semiconductor film with the first laser beam is held in order to form a crystallized semiconductor film.

21. The method for manufacturing the semiconductor device according to Claim 19, wherein the radiating the semiconductor film with the second laser beam is held in order to eliminate an oxide film on the semiconductor film.

22. The method for manufacturing the semiconductor device according to Claim 19, wherein the radiating the semiconductor film with the second laser beam is held in order to level a surface of the semiconductor film.

23. The method for manufacturing the semiconductor device according to Claim 19, wherein the method further comprises a step of forming an oxide film on the semiconductor film before radiating the semiconductor film with the first laser beam.

24. The method for manufacturing the semiconductor device according to Claim 19, wherein an energy density of the first laser beam is 300 to 500mJ/cm².

25. A method for manufacturing a semiconductor device comprising:
forming a semiconductor film over an insulating surface;
radiating the semiconductor film with a first laser beam;
radiating the semiconductor film with a second laser beam after radiating with the first laser beam; and
radiating the semiconductor film with a third laser beam after radiating with the second laser beam,
wherein an energy of the third laser beam is higher than an energy of the first laser beam, and
wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.

26. The method for manufacturing the semiconductor device according to Claim 25, wherein the radiating the semiconductor film with the first laser beam is held in order to form a crystallized semiconductor film.

27. The method for manufacturing the semiconductor device according to Claim 25, wherein the radiating the semiconductor film with the second laser beam is held in order to eliminate an oxide film on the semiconductor film.

28. The method for manufacturing the semiconductor device according to Claim 25, wherein the radiating the semiconductor film with the second laser beam is held in order to level a surface of the semiconductor film.

29. The method for manufacturing the semiconductor device according to Claim 25, wherein the method further comprises a step of forming an oxide film on the semiconductor film before radiating the semiconductor film with the first laser beam.

30. The method for manufacturing the semiconductor device according to Claim 25, wherein an energy density of the first laser beam is 300 to 500mJ/cm².

31. A method for manufacturing a semiconductor device comprising:
forming a semiconductor film over an insulating surface;
crystallizing the semiconductor film by a heat treatment to form a crystallized semiconductor film;
radiating the crystallized semiconductor film with a first laser beam;
radiating the crystallized semiconductor film with a second laser beam after radiating with the first laser beam; and
radiating the crystallized semiconductor film with a third laser beam after radiating with the second laser beam,
wherein a wavelength of the second laser beam and a wavelength of the third laser beam are different from a wavelength of the first laser beam.

32. The method for manufacturing the semiconductor device according to Claim 31, wherein the radiating the crystallized semiconductor film with the first laser beam is held in order to improve a crystal characteristic of the crystallized semiconductor film.

33. The method for manufacturing the semiconductor device according to Claim 31, wherein the radiating the crystallized semiconductor film with the second laser beam is held in order to eliminate an oxide film on the crystallized semiconductor film.

34. The method for manufacturing the semiconductor device according to Claim 31, wherein the radiating the crystallized semiconductor film with the second laser beam is held in order to level a surface of the crystallized semiconductor film.

35. The method for manufacturing the semiconductor device according to Claim 31, wherein the method further comprises a step of forming an oxide film on the crystallized semiconductor film before radiating the crystallized semiconductor film with the first laser beam.

36. The method for manufacturing the semiconductor device according to Claim 31, wherein an energy density of the first laser beam is 300 to 500mJ/cm².